

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 3 4/5/2007
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Please see instructions on page 2 before filling out the form.

Company Name:	Formation Capital Corp.
Facility Name:	Idaho Cobalt Project
Facility ID No.:	
Brief Project Description:	Cobalt mine and mill.

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES

1.	2.	3.											
		Air Pollutant Maximum Change in Emissions Rate (lbs/hr or t/yr)											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
Ore Stockpile	EP301	0.02	0.00										
1200-LD-201- Tram Bin to Coarse	EP302	0.11	0.15										
Loader grab from Coarse Ore Stockpile	EP303	0.04	0.07										
Waste Rock Stockpile	EP401	0.01	0.00										
1200-LD-201- Tram Bin to Waste Rock Stockpile	EP402	0.11	0.07										
Loader grab from Waste Rock Stockpile	EP403	0.01	0.03										
Loader dump Waste Rock Stockpile	EP404	0.01	0.03										
Conc bldg tailings pile	EP501	0.00	0.00										
Loader grab from Tailings Stockpile	EP502	0.00	0.00										
Loader dump Tailings to Truck	EP503	0.00	0.00										
TWSF Waste Rock truck dumping	EP601	0.00	0.00										
TWSF area management	EP602	0.28	0.20										
TWSF wind erosion	EP603	2.56	5.60										
Truck Dumps Tailings TWSF	EP604	0.00	0.00										
Roads (max of 3 scenarios)	EP901 or 902	3.82	5.74										
Loader Traffic	EP1001	0.15	0.25										
1200-BN-201 - Mined Rock to Tram	EP1101	0.00	0.00										
1200-FE-201 - Bin to Tram	EP1102	0.11	0.22										
Loader drop to Primary Crusher feed bin	EP1201	0.04	0.07										
1200-BN-203 - Fine Ore Bin (in)	EP1401	0.00	0.00										
1200-BN-203 - Fine Ore Bin (out) feed bin	EP1402	0.00	0.00										
Cement Silo (in)	EP1501	0.01	0.00										
Cement Silo (out) fully enclosed	EP1502	0.00	0.00										
Underground emissions from mine	EP1601 or 3001	1.58	1.72										


	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 3 4/5/2007
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Please see instructions on page 2 before filling out the form.

Company Name:	Formation Capital Corp.
Facility Name:	Idaho Cobalt Project
Facility ID No.:	
Brief Project Description:	Cobalt mine and mill.

SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES

1.	2.	3.											
		Air Pollutant Maximum Change in Emissions Rate (lbs/hr or t/yr)											
		PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
Fugitive Source Name	Fugitive ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Source(s)													
Load /Unload at Topsoil stockpile	EP1701	0.00	0.00										
Topsoil Stockpile	EP1702	0.29	0.01	0.57	0.55	4.82	4.69	18.98	18.48				
Truck Dump Crusher Ore Pile (no t	EP1301	0.00	0.00										
Mined Rock truck dump (no tram s	EP1303	0.00	0.00										
Loader grab from mined rock pile (EP1304	0.05	0.10										
Mined Rock stockpile (no tram sce	EP1302	0.01	0.00										
Truck Dump Crusher Ore Pile (no t	EP2001	0.00	0.00										
Total		9.20	14.27	0.57	0.55	4.82	4.69	18.98	18.48				

	DEQ AIR QUALITY PROGRAM 1410 N. Hilton, Boise, ID 83706 For assistance, call the Air Permit Hotline - 1-877-5PERMIT	PERMIT TO CONSTRUCT APPLICATION Revision 3 4/5/2007												
Please see instructions on page 2 before filling out the form.														
Company Name:	Formation Capital Corp.													
Facility Name:	Idaho Cobalt Project													
Facility ID No.:														
Brief Project Description:	Cobalt mine and mill.													
SUMMARY OF EMISSIONS INCREASE (PROPOSED PTE - PREVIOUSLY MODELED PTE) - FUGITIVE SOURCES														
1.	2.	3.												
Air Pollutant Maximum Change in Emissions Rate (lbs/hr or t/yr)														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">PM₁₀</td> <td style="text-align: center;">SO₂</td> <td style="text-align: center;">NO_x</td> <td style="text-align: center;">CO</td> <td style="text-align: center;">VOC</td> <td style="text-align: center;">Lead</td> </tr> <tr> <td style="text-align: center;">Fugitive Source Name</td> <td style="text-align: center;">Fugitive ID</td> <td style="text-align: center;">lb/hr T/yr</td> <td style="text-align: center;">lb/hr T/yr</td> <td style="text-align: center;">lb/hr T/yr</td> <td style="text-align: center;">lb/hr T/yr</td> </tr> </table>	PM ₁₀	SO ₂	NO _x	CO	VOC	Lead	Fugitive Source Name	Fugitive ID	lb/hr T/yr	lb/hr T/yr	lb/hr T/yr	lb/hr T/yr
PM ₁₀	SO ₂	NO _x	CO	VOC	Lead									
Fugitive Source Name	Fugitive ID	lb/hr T/yr	lb/hr T/yr	lb/hr T/yr	lb/hr T/yr									
Fugitive Source(s)														

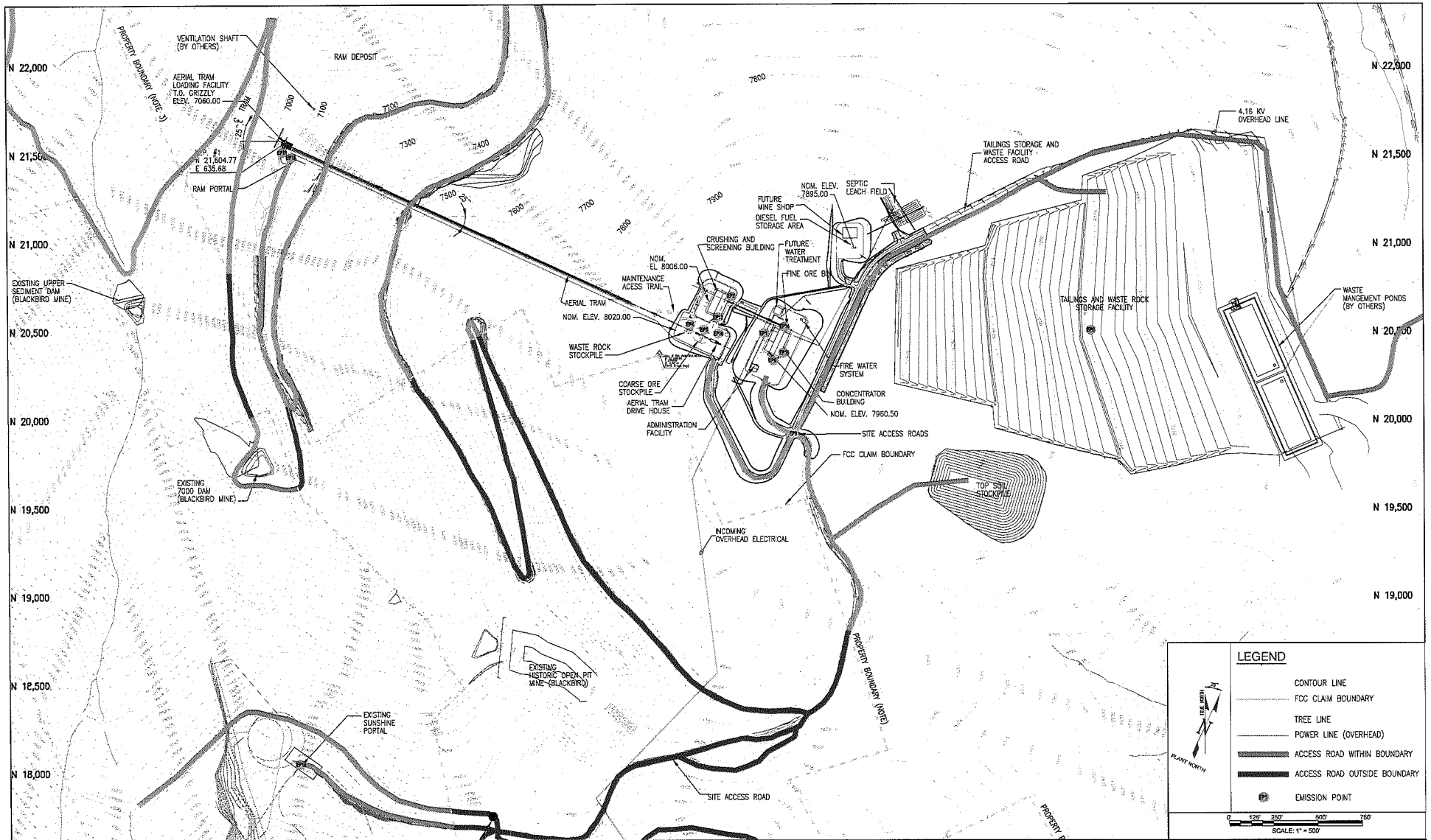
Instructions for Form EI-CP4

This form is designed to provide the permit writer and air quality modeler with a summary of the change in criteria pollutant emissions of each emission unit/point associated with this permit application. This information may be used by the IDEQ to perform an air quality analysis or to review an air quality analysis submitted with the permit application or requested by the IDEQ.

Please fill in the same company name, facility name, facility ID Number, and brief project description as on Form CS in the boxes provided. This is useful in case any pages of the application get separated.

1. Provide the name of the emission unit. This name should match names on other submittals to IDEQ and within this application.
2. Provide the identification number for the fugitive source. This ID should match IDs on other submittals to IDEQ and within this application.
3. Provide the increase in emissions in pounds per hour and tons per year for all criteria pollutants emitted by this fugitive source. In this form, increase in emissions for an emission unit are the proposed PTE - Previously modeled PTE. If the fugitive source has or will have control equipment or some other proposed permit limitation such as hours of operation or material usage, the control efficiency or proposed permit limit(s) may be used in calculating proposed potential to emit.

NOTE: Attach a separate sheet of paper, or electronic file, to provide additional documentation on the development of the emission rates. Documentation can include emissions factors, throughput, and example calculations.



Formation Capital Corp U.S.
812 Shoup Street
Salmon, ID 83467
208-756-4578

Plot Plan Portals, Milling Facilities, and TWSF Air Permit Emission Points

Drawn By: Annette McFarland
Date: 05/30/08
Project: Air Permit

Form MI

All information required for form MI, all pages, is included in the modeling report in Section 7.0 (BPIP building data in Attachment 4 of Appendix E). This information is also included on the electronic data files submitted on CD-ROM.



DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

PERMIT TO CONSTRUCT APPLICATION

Revision 3
03/26/07

Please see instructions on page 2 before filling out the form.

IDENTIFICATION		
Company Name:	Facility Name:	Facility ID No:
Formation Capital Corporation, U.S.	Idaho Cobalt Project	
Brief Project Description: Cobalt mine and mill		
APPLICABILITY DETERMINATION		
1. Will this project be subject to 1990 CAA Section 112(g)? (Case-by-Case MACT)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* * If YES, applicant must submit an application for a case-by-case MACT determination [IAC 567 22-1(3)"b" (8)]
2. Will this project be subject to a New Source Performance Standard? (40 CFR part 60)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please identify sub-part: _____
3. Will this project be subject to a MACT (Maximum Achievable Control Technology) regulation? (40 CFR part 63)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please identify sub-part: _____
THIS ONLY APPLIES IF THE PROJECT EMITS A HAZARDOUS AIR POLLUTANT		
4. Will this project be subject to a NESHAP (National Emission Standards for Hazardous Air Pollutants) regulation? (40 CFR part 61)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please identify sub-part: _____
5. Will this project be subject to PSD (Prevention of Significant Deterioration)? (40 CFR section 52.21)	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES
6. Was netting done for this project to avoid PSD?	<input checked="" type="checkbox"/> NO	<input type="checkbox"/> YES* *If YES, please attach netting calculations
<p align="center">IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT</p>		

Appendix B

Equipment List

Source ID	Source
EP101	1900-GE-901 - Generator
EP201	1200-DC-201 - Crushing Dust Collector
EP301	Ore Stockpile
EP302	1200-LD-201- Tram Bin to Coarse Ore Stockpile
EP303	Loader grab from Coarse Ore Stockpile
EP401	Waste Rock Stockpile
EP402	1200-LD-201- Tram Bin to Waste Rock Stockpile
EP403	Loader grab from Waste Rock Stockpile
EP404	Loader dump Waste Rock Stockpile into Truck
EP501	Conc bldg tailings pile
EP502	Loader grab from Tailings Stockpile
EP503	Loader dump Tailings to Truck
EP601	TWSF Waste Rock truck dumping
EP602	TWSF area management
EP603	TWSF wind erosion
EP604	Truck Dumps Tailings TWSF
EP901	Roads (tram scenario)
EP901	Roads (no tram scenario)
EP902	Roads (Sunshine Portal scenario)
EP1001	Loader Traffic
EP1101	1200-BN-201 - Mined Rock to Tram Bin
EP1102	1200-FE-201 - Bin to Tram
EP1201	Loader drop to Primary Crusher feed bin
EP1301	Mined Rock truck dump
EP1302	Mined Rock stockpile
EP1303	Loader grab from mined rock pile
EP1304	Loader drop to Truck
EP1401	1200-BN-203 - Fine Ore Bin (in)
EP1402	1200-BN-203 - Fine Ore Bin (out) fully enclosed
EP1501	1400-SI-401 - Cement Silo (in)
EP1502	1400-SI-401 - Cement Silo (out) fully enclosed

Source ID	Source
EP1601	Underground emissions vented from Ram Portal
EP1701	Load /Unload at Topsoil stockpile
EP1702	Topsoil Stockpile
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)
EP 3001	Underground emissions vented from Sunshine portal

- Notes:
1. Universally represents tram scenario only emissions
 2. Universally represents no tram scenario only emissions
 3. Universally represents Sunshine portal only

Appendix C

Application Fee, and Affidavit of Publication for Informational Meeting Announcement

FORMATION CAPITAL CORPORATION, U. S.

812 SHOUP STREET
SALMON, ID 83467
PH. 208-756-4578

WELLS FARGO BANK, N.A.
www.wellsfargo.com
92-379/1241

5931

PAY TO THE
ORDER OF

One Thousand

5931

\$

07/15/2008

00/100

DOLLARS

\$*****1,000.00

Department of Environmental Quality
1410 N. Hilton
Boise, Idaho 83706-1255

MEMO

Jason Smith
AUTHORIZED SIGNATURE

⑈0000005931⑈ ⑆124103799⑆ 1240003531⑈

Details on Back
Security Features Included

FORMATION CAPITAL CORPORATION, U. S.

5931

Department of Environmental Quality

07/15/2008

5931

2008 Air Permit..... 1,000.00

Total

1,000.00

Get fast
results
in the ...

CLASSIFIEDS

Easy
Fun
Fast

THE RECORDER HERALD CLASSIFIED ADVERTISING RATES

First Insertion 30¢ per word*
2 and 3 Insertions ... 28¢ per word*
4 and Up 24¢ per word*
Bold Type 5¢ per word*
(*\$4.50 Minimum on all insertions)
Payment must accompany all orders
unless the customer has established an
advertising account with The
Recorder Herald.
Classified Display — \$5.25 Col./inch
Card Of Thanks — \$4.90 and up
Call (208) 756-2221

FOR SALE

2002 Chevy Silverado, 4wd pickup, 2500
HD, ext. Cab, one owner, 89,000 miles,
\$11,000, call 756-4268. S-7-3-2tp
Three wheel Honda, Powder River horse
rack for a pickup, swamp cooler, phone
evenings (208) 894-2467. S-6-26-3tp
For sale - four-year-old Molly mule, trained
to pack, 879-5559. S-7-3-2tp
Haulmark enclosed cargo trailers, flat-bed,
dump, ATV trailers. Drive a little save a
lot. Northwest Trailer Sales, Hamilton,
Montana, toll free 1-866-363-0464.
S-3-22-tfc
HORSE TRAILERS for sale. Karl Tyler
Chevrolet, Missoula, Mt. 1-800-227-2438.
S-11-06-tfc
FIRE STARTER OR PACKING - The
Recorder Herald, 519 Van Dref St. - Only
10¢ a pound. S-9-8-tfc

GARAGE SALE

Yard sale Saturday, July 12, 8 a.m. to 2
p.m., 609 Broadway Street. GS-7-10-1tp
Two family garage sale, no junk! Baby
items, electric stove, gas fireplace, exer-
cise equipment, books, etc. 404 Copper
Street, 8 a.m. to noon, no early birds.
GS-7-10-1tp
Multifamily stuff reduction including fab-
ric, July 12, 9 a.m. to noon, Highway 93
South, Apache Way, watch for signs.
GS-7-10-1tp
Two family yard sale, Highway 93 South
near Shoup Bridge, July 11 and 12.
GS-7-10-1tp
Fabric and notions only sale inside at 206
W. 3rd Ave. Saturday, July 12, 7 a.m. to 1
p.m. or by appointment, 240-8454. Hun-
dreds of yards of assorted new fabric.
GS-7-10-1tp

FOR RENT

Two bedroom, one bath house in town,
garage, propane heat, electric stove, fridge,
laundry hookups, \$480 plus deposit, 756-
8497. R-7-10-2tp
Retail space for rent or lease, 504 Main
Street, approximately 2,300 square feet
available now, call (208) 940-0394.
R-7-3-5tp
Three bedroom, two bath house ready by
August 1, new roof, air condition, heat
pump, new flooring, 209 Fairmont, need
references, may be able to rent with op-
tion to buy, \$650, call Linda, 756-6635.
R-7-10-1tp
\$400, 506 Main Street, one bedroom, one
bath upstairs unit, like new inside, refrig-
erator, microwave, secured entry, blinds,
water, trash sewer included, (208) 756-
6911, (208) 940-0394. R-6-26-tfc

Two bedroom, 1½ bath apartment with
W/D hookups, \$495 per month, \$500 de-
posit, call 993-0181. R-7-10-tfc
One bedroom apartment in duplex. Large
kitchen and living room, nice yard, avail-
able early July, references required, \$435
per month. (208) 756-4485. R-7-10-1tp
Sungate Apartments - Beautiful 1, 2, and 3
bedroom units. Please call 756-4166 for
availability and price. Office located at 360
N. Margaret Street in Salmon, TDD 1-800-
545-1833 ext. 298. Now accepting Sec-
tion 8 Vouchers. Check out our website:
www.sungateapartments.net.
R-9-6-tfc
Office Space - downtown location, easy
parking, low rates starting at \$240 a
month, including utilities. 756-4489 or
3180. R-8-16-tfc
Three bedroom, one bathroom, \$585 per
month, call Paige Oeding Real Estate at
756-2670. R-6-26-tfc

600 square foot nice clean office located in
the Professional Plaza 1301 S Main. Paved
off street parking, office divided into two
rooms plus full bathroom, \$450 per month,
865-2212. R-6-19-4tp
One bedroom apartment, \$340 plus de-
posit and electric, Shadow Ridge Apart-
ments 756-8223. R-3-13-tfc
Rent Adjusted To Income - B&H Apart-
ments is currently accepting applications
for future openings in family and elderly
apartments. Rent is based on income due
to Section 8 Idaho Housing guidelines. Pick
up an application at 701 Imperial Way
Apartment 3C or call 756-
4918. R-7-15-tfc

LOST AND FOUND

IF YOU HAVE FOUND or lost an item,
The Recorder Herald will advertise it in
the classified section for one week FREE
of charge.

HELP WANTED

Salmon School District No. 291 is seeking
qualified applicants for the following po-
sitions: high school head coach for boys
basketball, girls basketball, cross-country
coach; substitute teachers; government-
economics teacher; Title One paraprofes-
sional; bus drivers. Please contact the
Salmon School District at (208) 756-4271.
HW-7-10-1tc

Be your own boss! Seeking experienced
satellite installation subcontractors, \$70 1-
room install! Start immediately! Proof of
Cert. and Ins. required. Contact Cliff at
866-457-0766. Email to: cliff@star-
westsatellite.net, www.starwestsatellite-
net. HW-6-26-6tp

Independence Inc. is now taking applica-
tions for a licensed RN. Apply in person
at 905 S Main St., Salmon, Idaho.
HW-5-15-tfc

Haddock gets degree

Sarah E. Haddock, a 2002 gradu-
ate of Salmon High School and a
2006 graduate of the University of
Idaho, received a degree in Medical
Technology from Sacred Heart
Medical Center in Spokane, Wash-
ington, June 26, 2008.

She has accepted a position at
Whitman Hospital & Medical Cen-
ter in Colfax, Washington.

REAL ESTATE

Gorgeous home at the mouth of Tower
Creek. Built in 2006 this home boasts 1,920
square feet of single level living. Three bed-
rooms, two baths, great room, custom
kitchen, laundry room, 780 square foot
oversized two-car garage, luxurious lawn,
large redwood deck, post and rail fencing
and automatic sprinkler system. 6.2 acres
with Tower Creek frontage. Serene setting,
lots of wildlife, one of a kind peaceful set-
ting. Brokers welcome. 756-4867.
RE-7-10-4tp

the place of use to resolve BLM ob-
jections and to reflect actual irrigat-
ing practices. The point of diversion
remains the same in Lot 4 SWNE
24 Sec 24 T16N R20E for 2.90 cfs.
The place of use is in Sec 24 T16N
R20E for 122.5 acres and in Sec 19
T16N R21E for 34 acres for a total
of 156.5 acres.

Protests may be submitted based
on the criteria of Sec 42-222, Idaho
Code.

Any protest against the proposed
change must be filed with the De-
partment of Water Resources, Eastern
Region, 900 N Skyline Dr Ste A,
Idaho Falls ID 83402 together with
a protest fee of \$25.00 for each ap-
plication on or before July 28, 2008.
The protestant must also send a
copy of the protest to the applicant.

David R. Tuthill, Jr., Director
7-10-2tc

**HARBER
DRILLING
INC**

Legal Notices

NOTICE TO CREDITORS CASE NO. CV 08-137

IN THE DISTRICT COURT OF
THE SEVENTH JUDICIAL DIS-
TRICT OF THE STATE OF IDAHO,
IN AND FOR THE COUNTY OF
LEMHI.

IN THE MATTER OF THE ES-
TATE OF: GARY R. HAMMOND, De-
ceased.

NOTICE IS HEREBY GIVEN that
JOE F. MCCRORY has been ap-
pointed personal representative to
administer the estate of GARY R.
HAMMOND, deceased. All creditors
of this estate are required to present
their claims within four (4) months
after the date of the first publication
of this notice or said claims will for-
ever be barred. Claims against the
estate must be presented to the
personal representative at the ad-
dress below indicated and filed with
the Court.

DATED this 4th day of June,
2008.

PAUL B. WITHERS for
JOE F. MCCRORY
Personal Representative
1301 Main Street, Suite 6
Salmon, Idaho 83467
(208) 756-2009 6-26-3tc

ADVERTISEMENT FOR BIDS

Sealed proposals will be re-

McGraw-Hill, 4082 Chinden
Blvd., Boise 83714
Idaho Plan Room c/o Blue Prints
Plus, 4082 Chinden Blvd., Boise
83714

Child Development Center, Deb
Cheney, 806 Poleline, Salmon
83467 (208-756-2016)

Documents may be obtained for
bidding purposes from the following
location:

DHW Central Office, 450 W.
State Street, 9th Floor, PO Box
83720, Boise, ID 83720-0036, (208)
334-0665.

For additional information or
questions, contact Tom Long, De-
partment of Health and Welfare, PH:
(208) 334-5563.

Project can be reviewed at the
Child Development Center, 806
Poleline, Salmon, Idaho. Coordinate
site visit with on-site representative
Deb Cheney at (208) 756-2016.

A bid bond in the amount of 5%
of the total bid amount, including
any add alternates; and a Public
Works Contractors License for the
State of Idaho is required to bid on
this work.

Estimated Cost: \$52,000 - Allen
J. Drennen, Chief, Bureau of Opera-
tional Services 7-10-2tc

NOTICE TO CREDITORS

CASE NO. CV 08-188

IN THE DISTRICT COURT OF

the Clerk of the Court.
DATED this 18th day of June
2008

WILLIAM MARSHALL TATE
Personal Representative
c/o Milton A. Slavin, Esq.
Slavin Law Office, Chtd.
118 North Center Street
Salmon, Idaho 83467
6-26-3tc

PUBLIC NOTICE

Formation Capital Corporation
U.S. (Formation) will hold an infor-
mational meeting, in accordance
with Idaho code 58.01.01.213.02(a),
on Monday July 21st, at Formation's
office at 812 Shoup Street in
Salmon, Idaho from 7:00 p.m. to
9:00 p.m. The purpose of the meet-
ing will be to provide information on
and discuss the company's air qual-
ity Permit To Construct application
for the Idaho Cobalt Project. The
project proposes to mine and con-
centrate cobalt ore in the near vi-
cinity of the inactive Blackbird mine
west of Salmon. The meeting is in-
tended to focus only on air quality
aspects of the proposed project.
The proposed action would rep-
resent a minor source of air pollutants
under IDEQ and EPA definitions.
7-10-2tc

IMPOUNDING OF PERSONAL PROPERTY

dozer located at the historic Casto
townsite.

4. After the impoundment, the
owner may regain possession by
contacting the Middle Fork District
Ranger at HC 63 Box 1669, Challis,
Idaho, 83225, providing title docu-
mentation or other proof of owner-
ship, and paying the costs of adver-
tising, removing, and storing the
property. If the property is not re-
deemed prior to October 24, 2008,
it may be disposed of as provided
by Secretary of Agriculture Regula-
tion 36 CFR 262.12.

Signed at Challis, Idaho this 3rd
day of July, 2008

/s/ Tom Gionet (for):
CHRIS GROVE
District Ranger
Middle Fork Ranger District
Salmon-Challis National Forest
7-10-1tc

NOTICE OF PROPOSED CHANGE OF WATER RIGHT TRANSFER NO. 74829

EVELYN R. CARLSON and THO-
MAS H. CARLSON, PO BOX 206,
LEADORE ID 83464, has filed Ap-
plication No. 74829 for changes to
the following water rights within
LEMHI County: Right No. 75-14483
and Right No. 75-14485; to see a
full description of these rights and
the proposed transfer, please see:

Appendix D

Emission Inventory

Source ID	Source	NOx tpy	CO tpy	PM tpy	SOx tpy	TOC tpy	NOx lbs/hr	CO lbs/hr	PM lbs/hr	SOx lbs/hr	TOC lbs/hr		
EP101	1900-GE-901 - Generator	3.637	1.539	0.196	1.132	0.199	14.547	6.155	0.783	4.526	0.794		
EP201	1200-DC-201 - Crushing Dust Collector			0.210					0.125				
EP301	Ore Stockpile			0.000					0.016				
EP302	1200-LD-201- Tram Bin to Coarse Ore Stockpile			0.154					0.110				
EP303	Loader grab from Coarse Ore Stockpile			0.067					0.040				
EP401	Waste Rock Stockpile			0.000					0.007				
EP402	1200-LD-201- Tram Bin to Waste Rock Stockpile			0.066					0.110				
EP403	Loader grab from Waste Rock Stockpile			0.029					0.009				
EP404	Loader dump Waste Rock Stockpile into Truck			0.029					0.009				
EP501	Conc bldg tailings pile			0.000					0.000				
EP502	Loader grab from Tailings Stockpile			0.000					0.000				
EP503	Loader dump Tailings to Truck			0.000					0.000				
EP601	TWSF Waste Rock truck dumping			0.001					0.002				
EP602	TWSF area management			0.201					0.279				
EP603	TWSF wind erosion			5.603					2.559				
EP604	Truck Dumps Tailings TWSF			0.001					0.000				
EP901	Roads (tram scenario)			1.586					1.047				
EP1001	Loader Traffic			0.250					0.149				
EP1101	1200-BN-201 - Mined Rock to Tram Bin			0.003					0.002				
EP1102	1200-FE-201 - Bin to Tram			0.220					0.110				
EP1201	Loader drop to Primary Crusher feed bin			0.067					0.040				
EP1401	1200-BN-203 - Fine Ore Bin (in)			0.003					0.002				
EP1402	1200-BN-203 - Fine Ore Bin (out) fully enclosed			0.000					0.000				
EP1501	1400-SI-401 - Cement Silo (in)			0.001					0.007				
EP1502	1400-SI-401 - Cement Silo (out) fully enclosed			0.000					0.000				
EP1601	Underground emissions vented from mine mouth	4.688	18.476	1.719	0.552		4.816	18.982	1.581	0.567			
EP1701	Load /Unload at Topsoil stockpile			0.000					0.001				
EP1702	Topsoil Stockpile			0.007					0.294				
	Total TRAM SCENARIO	8.3	20.0	10.4	1.7	0.2	19.4	25.1	7.3	5.1	0.8		
NO TRAM SCENARIO These sources replace the yellow Tram Only sources. Truck dump Waste Rock is from Mine to TWSF instead of from Waste rock stockpile at the tram to TWSF													
EP0901	Roads (no tram scenario)			5.742					3.819				
EP1301	Truck Dump Crusher Ore Pile (no tram scenario)			0.002					0.001				
EP1303	Mined Rock truck dump			0.003					0.002				
EP1304	Loader grab from mined rock pile			0.096					0.048				
EP1302	Mined Rock stockpile			0.000					0.007				
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)			0.002					0.001				
	Total NO TRAM SCENARIO	8.3	20.0	14.3	1.7	0.2	19.4	25.1	9.9	5.1	0.8		
SUNSHINE PORTAL SCENARIO This scenario matches the No Tram scenario except for a different mine portal location, shorter roads, and no 1301-1304 transfer to larger trucks outside the mine													
EP 3001	For the Sunshine Portal scenario: EP 3001 replaces EP1601.	4.688	18.476	1.719	0.552	0.000	4.816	18.982	1.581	0.567	0.000		
EP 0902	Roads (Sunshine portal scenario)			3.714					2.457				
	Total SUNSHINE PORTAL SCENARIO	8.3	20.0	12.2	1.7	0.2	19.4	25.1	8.5	5.1	0.8		
	universally represents tram scenario only emissions												
	universally represents tram scenario only emissions												
	All model sources named in blue highlights on each calculation worksheet!												
	Model source parameter derivation documented in blue text on each worksheet for each model source												
	Green hourly emission rates are only for hours with wind speed over 12 mph												

1119 hp Cat Stand-by Generator*

(.00809)(S%)

	NOx	CO	PM	SOx	TOC	Total Emissions
AP-42 (lbs/hp-hr)	0.013	0.006	0.001	0.004	0.001	
lbs/hr	14.547	6.155	0.783	4.526	0.794	26.8
tpy	3.637	1.539	0.196	1.132	0.199	6.7

*Assumes generator will be permitted as a stand-by unit not to exceed 500 hrs/yr operation.

Reference: AP-42 Section 3.4 Table 3.4-1

HP= 1119
 Max hrs/day= 24
 Max hrs/yr= 500
 Max sulfur % in diesel 0.5

Model Source name
 EP101
 All model stack data from manufacturer's specifications

Emission factors from AP-42 Section 3.4, Table 3.4-3 and 4

Pollutant	EF	Hrs/yr	Units	lb/yr	tons/yr	EPA regulated HAPs tons/yr	Max lb/hr	avg lb/hr
Benzene	7.76E-04	500	lbs/hp-hr	434.17	0.2171	0.2171	0.8683	0.0496
Toluene	2.81E-04	500	lbs/hp-hr	157.22	0.0786	0.0786	0.3144	0.0179
Xylenes	1.93E-04	500	lbs/hp-hr	107.98	0.0540	0.0540	0.2160	0.0123
Propylene	2.79E-03	500	lbs/hp-hr	1561.01	0.7805		3.1220	0.1782
Formaldehyde	7.89E-05	500	lbs/hp-hr	44.14	0.0221	0.0221	0.0883	0.0050
Acetaldehyde	2.52E-05	500	lbs/hp-hr	14.10	0.0070	0.0070	0.0282	0.0016
Acrolein	7.88E-06	500	lbs/hp-hr	4.41	0.0022	0.0022	0.0088	0.0005
Napthalene	1.30E-04	500	lbs/hp-hr	72.74	0.0364	0.0364	0.1455	0.0083
Acenaphthylene	9.23E-06	500	lbs/hp-hr	5.16	0.0026		0.0103	0.0006
Acenaphthene	4.68E-06	500	lbs/hp-hr	2.62	0.0013		0.0052	0.0003
Fluorene	1.28E-05	500	lbs/hp-hr	7.16	0.0036		0.0143	0.0008
Phenanthrene	4.08E-05	500	lbs/hp-hr	22.83	0.0114		0.0457	0.0026
Anthracene	1.23E-06	500	lbs/hp-hr	0.69	0.0003		0.0014	0.0001
Fluoranthene	4.03E-06	500	lbs/hp-hr	2.25	0.0011		0.0045	0.0003
Pyrene	3.71E-06	500	lbs/hp-hr	2.08	0.0010		0.0042	0.0002
Benz(a)anthracene	6.22E-07	500	lbs/hp-hr	0.35	0.0002		0.0007	0.0000
Chrysene	1.53E-06	500	lbs/hp-hr	0.86	0.0004		0.0017	0.0001
Benzo(b)fluoranthene	1.11E-06	500	lbs/hp-hr	0.62	0.0003		0.0012	0.0001
Benzo(k)fluoranthene	2.18E-07	500	lbs/hp-hr	0.12	0.0001		0.0002	0.0000
Benzo(a)pyrene	2.57E-07	500	lbs/hp-hr	0.14	0.0001		0.0003	0.0000
Indeno(1,2,3-cd)pyrene	4.14E-07	500	lbs/hp-hr	0.23	0.0001		0.0005	0.0000
Dibenz(a,h)anthracene	3.46E-07	500	lbs/hp-hr	0.19	0.0001		0.0004	0.0000
Benzo(g,h,i)perylene	5.56E-07	500	lbs/hp-hr	0.31	0.0002		0.0006	0.0000
Total PAH	2.12E-04	500	lbs/hp-hr	118.61	0.0593		0.2372	0.0135

Emissions in AP-42 are < values listed

1.280 0.417

PM10 Calculations for ICP Stock Piles

Max daily volume - ore 1067 tons
Max daily volume - waste 444 tons

Assumes:

- Density of the the piles is 15.1 ft³/ton.
- Trapezoid shaped:
 - Total height of the stock pile is 6'.
 - Top width of the stock pile is 12'.
 - Bottom width of the stock pile is 24'.
 - Base to height ratio of 1 to 2.
- Primary factors influencing dust emissions from stock piles are the wind velocity, surface area, and silt content (weight %) of the material.

Ore stockpile

Volume = 16111.7 cubic feet

Area of the trapezoid = $\frac{1}{2} \times \text{height} \times [\text{top width (a)} + \text{bottom width (b)}]$

Area = 108 square feet

Length = volume / area = 149.2 feet

Surface area of trapezoid affected by wind = area of top + area of both ends + area of both sides

Top area = $(12')(149.2) = 1790.4 \text{ ft}^2$

End area = $(2)(108) = 216 \text{ ft}^2$

Side area = $(2)(8.5')(149.2) = 2536.4 \text{ ft}^2$

Total area = 4542.8 ft²

Waste Stockpile

444 tons x 15.1 ft³/ton = 6704.4 ft³

Area of the trapezoid = $\frac{1}{2} \times \text{height} \times [\text{top width (a)} + \text{bottom width (b)}]$

= $\frac{1}{2} \times 6' \times (12' + 24') = 108 \text{ ft}^2$

Length = volume / area = $6704.4 \text{ ft}^3 / 108 \text{ ft}^2 = 62.08 \text{ ft}$

Surface area of trapezoid affected by wind = area of top + area of both ends + area of both sides

Top area = $(12')(62.08) = 744.93 \text{ ft}^2$

End area = $(2)(108) = 216 \text{ ft}^2$

Side area = $(2)(8.5')(62.08) = 1055.36 \text{ ft}^2$

Total area = 2016.29 ft²

Portal Mined Rock Stockpile

500 tons (max) x 15.1 ft³/ton = 7550 ft³

Area of the trapezoid = $\frac{1}{2} \times \text{height} \times [\text{top width (a)} + \text{bottom width (b)}]$

Area = $\frac{1}{2} \times 6' \times (14' + 28') = 126 \text{ ft}^2$

Length = volume / area = $7550 \text{ ft}^3 / 126 \text{ ft}^2 = 59.92 \text{ ft}$

Surface area of trapezoid affected by wind = area of top + area of both ends + area of both sides

Top area = $(14')(59.92) = 838.89 \text{ ft}^2$

End area = $(2)(126) = 252 \text{ ft}^2$

Side area = $(2)(8.5')(59.92) = 1018.64 \text{ ft}^2$

Total area = 2109.52 ft² = 0.0484 acres

Top Soil Stockpile

600 foot diameter

$$A = \pi \cdot r^2$$

$$A = 3.1415926535 \cdot (300') \cdot (300')$$

$$A = 282743.3 \text{ ft}^2$$

Dust Emissions

Dust emissions from the ore and waste piles were estimated using the methodology presented in *Emission Estimation: Alternative Methodology* (WRAP Fugitive Dust Handbook) Chapter 9.3 on Storage Pile Wind Erosion

Annual TSP emissions factor equation for wind blown dust from active storage piles:

$$\text{TSP (lb/day/acre of surface)} = 1.7 (s/1.5)(f/15)$$

$$\text{TSP (lb/year/acre of surface)} = 1.7 (s/1.5)(365 [365-p]/235)(f/15)$$

Where, s = silt content of material (weight %) = 6.4 conservative mean for gravel roads, high because most materials will be coarse rock

p = number of days per year with at least 0.01 inches of precipitation = 0
documented on Roads Calculations worksheet, no credit for frozen winter because piles could be worked then

f = percentage of time the unobstructed wind speed is greater than 12 mph at the mean pile height. = 5.6%

% calculated from 2004 onsite met data used for modeling analysis

From WRAP Fugitive Dust handbook Section 9.3, Based on the PM10/TSP ratio of 0.5 for wind blown dust from active storage piles published in Section 13.2.5 of AP-42 and a PM2.5/PM10 ratio of 0.15 for wind blown dust, the PM10 and PM2.5 emission factor equations (in units of lb/day/acre) would be:

$$\text{PM10 (lb/year/acre)} = 0.5 \text{ times TSP (lb/acre/year)}$$

Calculations:

Ore and waste piles are dumped by the haul trucks in a straight line (trapezoidal-shaped pile), giving a total wind exposed area of 4543 ft² for a 1067 ton pile and 2106 ft² for a 444 ton pile.

	lbs/yr/acre of surface	lbs/hr/acre of surface for hrs (assume f=100% to calculate hrly max EF to be used in model with wind speed dependency)
E _{TSP} =	15.3516	0.3022
E _{PM10} =	7.6758	0.1511

Ore stockpile: 4543 ft ² / 43,600 ft ² /acre = 0.0794 acre	0.1042 acres
Waste rock stockpile:	0.0462 acres
Portal Mined Rock Stockpile	0.0484 acres
Conc building tailings stockpile est.	0.01 acres
Topsoil stockpile	6.4849 acres

Control efficiency	Tailings stockpile	90%	from 18-20% moisture content, removed within 24 hours, wind protection from bldg
	Topsoil stockpile	70%	From soil moisture initially and finally, revegetation and inactivity during most of project life would likely result in higher wind erosion control

	mean size (acres)	PM-10 EF (lb/yr/acre)	PM-10 EF (lb/hr/acre when winds >12 mph threshold)	Control eff	Uncontrolled		Controlled		Model Source name
					lb/hr (when wind speed over 12 mph)	tons/yr	lb/hr (when wind speed over 12 mph)	tons/yr	
Ore stockpile beside crusher bldg	0.1042	7.6758	0.1511	0%	0.015746	0.0004	0.0157	0.0004	EP301
Waste Rock Stockpile	0.0462	7.6758	0.1511	0%	0.006981	0.000177	0.0070	0.0002	EP401
Portal Mined Rock Stockpile	0.0484	7.6758	0.1511	0%	0.007314	0.000186	0.0073	0.0002	EP2002
Tailings pile, inside alcove, small, wet, cleared daily	0.01	7.6758	0.1511	90%	0.001511	3.84E-05	0.0002	0.0000	EP501
Topsoil stockpile	6.4849	7.6758	0.1511	70%	0.979946	0.024888	0.2940	0.0075	EP1702

For all stockpiles, model source parameters are based upon mean emission ht (top to top third of the pile) and mean area of emissions from sizes documented on this worksheet

PM10 Calculations for TWSF

Pile surface management

D4 dozer seasonally managing tailings, meeting land use req for compaction that will limit future wind erosion
high moisture content limits emissions

4 max hrs/day
1440 max hrs/year
14.8 % Moisture content = M

TWSF daily max feed

1037 tons per day from concentrator @ 19% moisture content
444 tons per day waste rock @ 5% moisture content
1481 tons total per day @ 14.8% average moisture content

AP-42 Table 11.9-1 Emission factors for Uncontrolled Dust Sources (at western coal mines) use Efs for overburden

PM10 EF (lbs/hr) = .75 (1.0)*(S^{1.5})/(M^{1.4}) 1037 tons feed from concentrator based upon 1067 tons mined - 30 tons concentrate derived

where M is moisture content (%)
S is silt content (%)

The mean silt content is 6.4% (Table 6-2, WRAP Fugitive Dust Handbook, 2006, conservative mean for gravel roads, because most material will be coarse rock).
S= 6.4 %

Model Source Name	Uncontrolled PM-10 emissions			Controlled PM-10 emissions		
	lb/day	lb/hr	tons/yr	lb/day	lb/hr	tons/yr
EP602	1.1166	0.2792	0.2010	1.1166	0.2792	0.2010

model source parameters based upon shape of bulldozer operating in activity area

Wind Erosion

Dumping into TWSF covered in Material Transfers

20 acres Max area where soil is not revegetated, covered with moist overlay, or compressed sufficiently to avoid wind erosion at any time

Assumes:

Emissions from dumping have already been accounted for in the Material Transfer calculations (Truck Dumps Tailings).

50% of the tailings will go back into the mine and approximately 500 ton/day could go to the the TWSF. Therefore, using a conservative estimate by duplicating the 400 ton waste rock stock pile emissions (see calculations in the stockpile spreadsheet), and taking an 80% efficiency because the material will be dumped, leveled, compacted, and undisturbed until reclamation, wind erosions will not be a factor after a brief period of time, even without accounting for most of the year being frozen or wet.

Emission factor from Stockpiles worksheet

model source parameters derived as described under stockpile worksheet

	mean size (acres)	PM-10 EF (lb/day/acre)	Control eff	Uncontrolled PM-10 emissions			Controlled PM-10 emissions		
				lb/day	max lb/hr	tons/yr	lb/day	max lb/hr	tons/yr
TWSF	20	7.6758	80%	153.5155139	12.792959	28.0165813	30.7031	2.5586	5.6033

max lbs/hr assumes 2 times the average daily emission rate

Model Source Name
EP603

PM10 Calculations for ICP Roads

Distances
are measured
consistent
with current

1 way distances			Uncontrolled PM-10										Controlled PM-10										INTERMITTENT TRAFFIC											
DAILY TRAFFIC Trips per day (2 per RT, one in, one out)			Uncontrolled PM-10										Controlled PM-10										INTERMITTENT TRAFFIC Trips per year (2 per RT, one in, one out)											
Model src #	Surface vehicles	# miles	Van	Pickup	Half Truck (one)	Half Truck (two)	Concrete	TOTAL trips with tram	% of daily VMT (with tram)	TOTAL trips no tram	% of daily VMT (with tram)	Concrete	Shutlers	Ammonium Nitrate	Diesel Fuel Tk	Gas Fuel Truck	Propane Truck	10 Wheel Supply Tk	Misc vendors and visitors	TOTAL														
68-73	claim line to intersection	1228	0.337362	20	16	51		40	0.120252	91	0.096972	400	268	80	300	2	2	46	40															
79-82	intersection to substation/entrance	488	0.344581	20	16	51		40	0.073109	85	0.025925																							
79-82	intersection to crusher	1267	0.334601	8	8	51		20	0.120674	88	0.063294																							
79-82	intersection to future shop/fuel stop	1239	0.334601	6				20	0.154504	81	0.054709																							
118-146																																		
292-295	to Ram portal within claim line	833	1.585533	8		51		20	0.184175	79	0.574906																							
64-91	to bottom of TWSF from future site	3815	0.727339	2				20	0.438421	47	0.15547																							
118-146																																		
292-295	Explosives	838	0.165595	2				2	0.004352	2	0.001643																							
EP00211																																		
EP00211	to Sunshine portal within claim line	465	0.088262	8		102		40		150	0.000478																							
	Total VMT per vehicle (tram)		18.1	11.0	0.0	26.8	20.2	1.3	77.5	daily	218.43	daily																						
	Total VMT per vehicle (no tram)		18.1	11.0	110.0	50.8	26.1	1.3	Total VMT	1.08	Total VMT	1.000																						
	Increase without tram		0.0	0.0	110.0	25.1	5.9	0.0																										
	Total VMT per vehicle (Sunshine portal)		18.1	11.0	37.9	22.7	26.1	1.3																										
For daily traffic, assume annual max is 250 days at the daily max																					No tram scenario only													
For annual traffic, assume daily traffic 1/200 annual																					Tram scenario only													
Lbs/yr assume all daily traffic is in 6 hrs, worst case because it would take more than 6 hrs to get to daily totals																					Sunshine portal scenario only													

Vehicle and Weight	Miles Driven/Day	Miles Driven/Year	Weight, empty	Weight, empty (tons)	Average Weight	Uncontrolled					Controlled				
						E (lb/vmt)	lb/hr	lb/day	tons/yr	max lb/hr	lb/day	tons/yr	max lb/hr	lb/day	tons/yr
Van	19.1	4778.6	0.75	1	0.875	0.12193784	0.44	2.3	0.3	0.09	0.47	0.06			
Pickup	11.0	2746.4	0.5	0.75	0.625	0.104832813	0.22	1.2	0.1	0.04	0.23	0.03			
Half truck (tram)	46.1	11519.6	35	75	55	0.786316317	6.79	36.2	4.5	1.36	7.25	0.91			
Half truck (no tram)	187.1	46762.7	35	75	55	0.786316317	27.58	147.1	18.4	5.52	29.42	3.68			
Stroller	96.7	21674.1	21	42	31.5	0.011890664	9.95	53.0	6.6	1.99	10.61	1.33			
Concrete 10 wheel	1.3	310.9	11	28	19.5	0.493116634	0.12	0.6	0.1	0.02	0.13	0.02			
Cement truck	0.6	128.0	40	80	60	0.817715331	0.10	0.5	0.1	0.02	0.10	0.01			
Shutlers	2.2	449.4	10	20	15	0.436202796	0.18	1.0	0.1	0.04	0.20	0.02			
Ammonium Nitrate	0.2	32.1	10	20	15	0.436202796	0.01	0.1	0.0	0.00	0.01	0.00			
Diesel Fuel Tk	0.7	140.2	10	20	15	0.436202796	0.06	0.3	0.0	0.01	0.06	0.01			
Gas Fuel Tk	0.0	0.9	10	20	15	0.436202796	0.00	0.0	0.0	0.00	0.00	0.00			
Propane Tk	0.0	0.9	10	20	15	0.436202796	0.00	0.0	0.0	0.00	0.00	0.00			
10 wheel supply Tk	0.1	14.7	11	28	19.5	0.493116634	0.01	0.0	0.0	0.00	0.01	0.00			
Misc Vendors and visitors	0.1	12.8	1	2	1.5	0.155480219	0.00	0.0	0.0	0.00	0.00	0.00			
Totals (with tram)	168.0						7.8	42.3	5.2	1.8	8.5	1.0			
Totals (with no tram)	308.0						28.7	163.1	18.1	5.7	30.6	3.8			
Totals (Sunshine)	317.0						19.8	99.0	12.3	3.7	18.8	2.5			

The facility

Model source parameters derived from mean height and vertical extent of haul trucks.

Horizontal model source dimensions based upon RT road widths, volume source allocation documented below [right]

60% control efficiency for watering and chemical dust suppressant

$$E = k \left(\frac{a}{12} \right)^{1.75} \left(\frac{W}{3} \right)^{0.75} \left(\frac{365 - P}{365} \right)^{0.75}$$

E = Emission Factor (lb/VMT)
 a = surface material silt content (%)
 W = mean vehicle weight (tons)
 a, b, k = empirical constants
 P = number of days in a year with at least 0.01 inches of precipitation

Allocating controlled emiss per model source

Model vol	Model src	No tram	Ind PM10	Ind PM10	Ind PM10	Ind PM10
src	name	lb/hr	Cum PM10 tons/yr	lb/hr	Cum PM10 tons/yr	lb/hr
Claim line to Intersection	EP001A	0.556855	0.370297955	0.034803	0.02314382	
Intersection to another / one Mtg / shop	EP001B	0.86258	0.633307644	0.008258	0.05333976	
to / from Ram portal	EP001C	3.30136	2.195342845	0.036882	0.0243827	
Intersection to TWSF	EP001D	0.901636	0.599570858	0.036065	0.02308283	

Road emissions were calculated by assuming:

- >0 Roads are covered with gravel/crushed limestone
- >000 The mean silt content is 6.4% (Table 6-2, WISAP Fugitive Dust Handbook, 2005)

Constants	PM ₁₀	PM _{2.5}	PM
k	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

g = 6.4
 W = 7
 P = 176
 274
 0.1=0.07 on-site wet data, days where measured precip
 0.1=0.07 on-site wet data, days where measured precip 6 non frozen months, every day in 6 frozen months (Nov-Apr)

Dust Emission Correction Due to Moisture and Temperature

Due to the physical location of the mine property in the Panther Creek Subbasin of the Salmon River at elevations ranging between 6011' and 8100' above sea level, precipitation and temperature will both aid in minimizing dust emissions during mine operations. Onsite meteorological data confirm 176 days per year of precipitation and 274 days per year with precip or average temperature regime prevailing dust

PM10 Calculations for ICP Loaders

Loader emissions were calculated by assuming:

6.4% silt (Table 6-2, WRAP Fugitive Dust Handbook, 2006).

83.3 max tons/hr through crusher bldg
 1067 max tons per day through crusher building
 280000 max tons per year through the crusher building
 4 tons per loader load
 266.75 loader trips/day =max crusher feed/tons per loader load
 250 feet per loader RT
 50 W = tons each loader (100000 lbs each)

	max ldr trips/ per hr	max VMT/ per day
Period	20.8	1.0
day	266.8	12.6
year	70000.0	3314.4

Modeled as an area source covering the short route between piles and the crusher feed bin. vert dims based upon loader width and vert extent, and drop ht

Uncontrolled PM-10				Controlled PM-10		
E (lbs/VMT)	max lbs/hr	lbs/day	tons/yr	max lbs/hr	lbs/day	tons/yr
0.75	0.74	9.51	1.25	0.149	1.903	0.250

Model Source Name EP1001

80% control

for gravel surface with watering and chemical dust suppression

AP-42 13.2.2 equation (1a), updated 12/03, for unpaved road traffic on an industrial site
 with precip reduction from AP-42 13.2.2.2 equ 2

$$E = k \left(\frac{s}{12} \right)^a \left(\frac{W}{3} \right)^b \left(\frac{365 - P}{365} \right)$$

E = Emission Factor (lb/VMT)¹
 s = surface material silt content (%)
 W = mean vehicle weight (tons)
 a, b, k = empirical constants
 P = number of days in a year with at least 0.01 inches of precipitation

Road emissions were

- Roads are covered with gravel/crush limestone
- The mean silt content is 6.4% (Table 6-2, WRAP Fugitive Dust Handbook, 2006).

Constants	PM _{2.5}	PM ₁₀	PM
k	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

s= 6.4
 W= 52 tons, half full, half empty
 P= 176 01=07 on-site met data, days w/measured precip
 274 01=07 on-site met data, days w/measured precip 6 non frozen months, every day in 6 frozen months (Nov-Apr)

Crusher Circuit

All Operations inside a building

AP-42 lb/ton EFs used, referenced for each EF

The building is closed. A ventilation system runs all air release through a baghouse with manufacturer's guarantee of 99.95% control efficiency
95.00% Control efficiency is applied to calculated summed emission rates of the equipment

Screening calculations are worst case, assuming everything on the screens is fine

Conveyor emission calculations are worst case because they assume all transfers are uncontrolled, which is generally not the case

Crushing Plant Process - Controlled	Throughput		PM Emission Factor	PM10 Emission Factor	PM Emissions		PM10 Emissions		E-Factor Reference
	tph	tpy			lb/hr	tpy	lb/hr	tpy	
Primary Crushing - Jaw Crusher ¹	83.3	280,000	0.0054 lb/ton	0.0024 lb/ton	0.45	0.76	0.20	0.34	AP-42, 5th Edition, Table 11.19.2-2 Tertiary crushing (uncontrolled) ³
Secondary Crushing - Cone Crusher ¹	83.3	280,000	0.0054 lb/ton	0.0024 lb/ton	0.45	0.76	0.20	0.34	AP-42, 5th Edition, Table 11.19.2-2 Tertiary crushing (uncontrolled) ³
Screening - 1-Triple Deck ¹	83.3	280,000	0.025 lb/ton	0.0087 lb/ton	2.08	3.50	0.72	1.22	AP-42, 5th Edition, Table 11.19.2-2 Screening (uncontrolled)
Conveyor Transfers ^{1,2}	83.3	280,000	0.003 lb/ton/point	0.0011 lb/ton/point	3.75	6.30	1.37	2.31	AP-42, 5th Edition, Table 11.19.2-2 conveyor transfer (uncontrolled)

Uncontrolled building emissions 6.73 11.31 2.50 4.20
Controlled building emissions 0.3365 0.5656 0.1250 0.2100

¹ Moisture content assumed to be 4%; above the moisture content for controlled crushing in the Emission Factor Reference provided.

² Process Flow verifies up to a total of 15 drop points are expected to be in use at the plant. Not all transfers handle all material, though they're conservatively assumed to here

³ AP-42 footnotes indicate no data available for primary/secondary crushing, but emission factors for PM₁₀ for tertiary crushers can be used as an upper limit for primary/secondary crushing.

Model Source name

EP201

Modeled with manufacturer's specs for baghouse release point

	Fugitive Source	Moisture content	AP-42 Table 11.19-2 EF	PM-10 EF (lbs/ton)	Max thruput tons/hr	Max thruput tons/day	Max thruput tons/yr	Uncontr Max PM10 emiss lbs/hr	Uncontr PM10 Max emiss lbs/day	Uncontr Max PM10 emiss tons/yr	Control Efficiency	Contr Max PM10 emiss lbs/hr	Contr Max PM10 emiss lbs/day	Contr Max PM10 emiss tons/yr										
EP1101	1200-BN-201 - Mined rock (Ore and waste) to Tram Bin	5%	A	1.60E-05	100	1511	400000	0.0016	0.0242	0.0032		0.0016	0.024176	0.0032										
EP1102	1200-FE-201 - Tram Bin to Tram	5%	B	0.0011	100	1511	400000	0.1100	1.6621	0.2200		0.11	1.6621	0.22										
EP302	1200-LD-201- Tram drop to Coarse Ore Stockpile	5%	B	0.0011	100	1067	280000	0.1100	1.1737	0.1540		0.11	1.1737	0.154										
EP402	1200-LD-201- Tram drop to Waste Rock Stockpile	5%	B	0.0011	100	444	120000	0.1100	0.4884	0.0660		0.11	0.4884	0.066										
EP403	Loader grab from Waste Rock Stockpile	5%	E	0.00048	18	444	120000	0.0087	0.2135	0.0289		0.008656	0.213526	0.02885491										
EP404	Loader dump Waste Rock Stockpile into Truck	5%	E	0.00048	18	444	120000	0.0087	0.2135	0.0289		0.008656	0.213526	0.02885491										
EP303	Loader grab from Coarse Ore Stockpile	5%	E	0.00048	83.3	1067	280000	0.0401	0.5131	0.0673		0.04006	0.513136	0.06732812										
EP1201	Loader drop to Primary Crusher feed bin	5%	E	0.00048	83.3	1067	280000	0.0401	0.5131	0.0673		0.04006	0.513136	0.06732812										
EP502	Loader grab from Tailings Stockpile	19%	E	0.00007	9	495	130350	0.0007	0.0367	0.0048	90%	6.68E-05	0.003673	0.00048356										
EP503	Loader dump Tailings to Truck	19%	E	0.00007	9	495	130350	0.0007	0.0367	0.0048	90%	6.68E-05	0.003673	0.00048356										
EP604	Truck Dumps Tailings (18 - 20% moisture content)	19%	C	0.0001	9	495	130350	0.0009	0.0495	0.0065	90%	0.00009	0.00495	0.00065175										
EP2001	Truck Dump Crusher Ore Pile (no tram scenario)	5%	A	1.60E-05	83.3	1067	280000	0.0013	0.0171	0.0022		0.001333	0.017072	0.00224										
EP1301	Mined Rock truck dump	5%	A	1.60E-05	100	1511	400000	0.0016	0.0242	0.0032		0.0016	0.024176	0.0032										
EP1303	Loader grab from mined rock pile	5%	E	0.00048	100	1511	400000	0.0481	0.7267	0.0962		0.048092	0.726663	0.09618303										
EP1304	Loader drop to Truck	5%	E	0.00048	100	1511	400000	0.0481	0.7267	0.0962		0.048092	0.726663	0.09618303										
EP1701	Load / unload at topsoil storage pile	20%	A	1.60E-05	100	444	30000	0.0016	0.0071	0.0002	50%	0.0008	0.003552	0.00012										
EP601	Truck Dump Waste Rock To TWSF	5%	A	1.60E-05	100	444	120000	0.0016	0.0071	0.0010		0.0016	0.007104	0.00096										
EP1401	1200-BN-203 - Fine Ore Bin (in)	NA	D	0.000046	83.3	1067	280000	0.0038	0.0491	0.0064	50%	0.001916	0.024541	0.00322										
EP1402	1200-BN-203 - Fine Ore Bin (out) fully enclosed	NA	D	0.000046	83.3	1067	280000	0.0038	0.0491	0.0064	100%	0	0	0										
EP1501	1400-SI-401 - Cement Silo (in)	NA	F	0.00034	20	40	4000	0.0068	0.0136	0.0007		0.0068	0.0136	0.00068										
EP1502	1400-SI-401 - Cement Silo (out) fully enclosed	NA	D	0.000046	20	40	4000	0.0009	0.0018	0.0001	50%	0.00046	0.00092	0.000046										
TOTAL																								
Emission factors referenced are all from AP-42 Section 11.19.2, Table 11.19-2															A	Truck unloading, fragmented stone								
except as noted to the right															B	conveyor transfer point								
															C	Truck unloading, crushed stone								
															D	conveyor transfer point (controlled)								
Control Efficiencies															E	AP-42 13.2.4 for aggregate handling. See below								
															F	AP42 Table 11.12-2 for controlled cement unloading to elevated storage silo (pneumatic)								
Fine Ore Bin outflow															100% physically enclosed from bin into concentrator building, where material immediately enters a wet process.									
Cement Silo outflow															50% controls, almost entirely physically enclosed from bin into concentrator building, where material immediately enters a wet process.									
Truck Dump, tailings															90% controlled by 18 - 20% moisture content, moisture added during concentration process									
Topsoil load / unload															50% control over dry material due to soil moisture									
Fine Ore Bin filtered sock vent															Very conservatively estimated since drop is fully enclosed, and the only vent is filtered with control efficiency >90%. Calcs below defend >70% controls (10 tons max/min)(0.0011 lbs PM10/ton) = .01 lbs PM10/min = 70 gr/min 700 acfm approx 1000 dscfm at 7500' Dust load 0.07 gr/dscf. Manual guarantees 0.02 gr/dscf, so control % is > 71%									
All sources modeled based upon mean horiz dimensions of the truck, loader, or area of activity, rel ht from mean ht of emitting activity, vert extent based upon dimensions of generating equipment (lk, loader, pile, ...)																								
Fine Ore Bin and Cement Silo inflow hor dimensions based upon size of sock filter vent, vert dims based upon silo height/shape. Outflows from those sources are fugitives from possible small openings in enclosure system																								
FRONT END LOADING/STOCKPILE DISTURBANCE EMISSIONS																								
PM=(k)*(0.0032)*((U/5)^1.3)/((M/2)^1.4) AP-42 13.2.4-3 Equation (1)																								
PM10=(K)*(0.0032)*((U/5)^1.3)/((M/2)^1.4) AP-42 13.2.4-3 Equation (1)																								
Where																								
k= Particle size multiplier for PM 0.74 Page 13.2.4																								
K= Particle size multiplier for PM10 0.35 Page 13.2.4-4																								
U= Mean wind speed 7 Conservative estimate from 2004 measured																								
M= For drier material moisture content 5% from column above																								
For wetter material 19%																								
For 5% MC material For 19% MC material																								
Uncontrolled PM = 0.00102 lbs/ton 0.00016																								
Uncontrolled PM10= 0.00048 lbs/ton 0.00007																								
AP-42 Fifth Edition Jan 95																								
Section 13 Miscellaneous Sources																								
13.2 Fugitive Dust Sources																								
13.2.4 Aggregate Handling and Storage Piles																								

Blasting (combustion)

AP-42 Section 13.3 utilized to calculate emissions from blasting material.

1511 tons rock blasted/day
2 lbs ANFO used / ton of rock

1.511 tons ANFO/day = (tons rock blasted) / 2000 lbs/ton) * (lbs ANFO / ton rock)

max lbs/hr conservatively assumes 1.5 times average hourly emissions for 8 hr/day
365 days/yr

	EF lbs/ton ANFO	Uncontrolled			Controlled		
		Max lbs/day	Max lbs/hr	Max tons/yr	Max lbs/day	Max lbs/hr	Max tons/yr
NO2	17	25.7	4.8	4.7	25.7	4.8	4.7
SO2	2	3.0	0.6	0.6	3.0	0.6	0.6
CO	67	101.2	19.0	18.5	101.2	19.0	18.5
PM-10	N/A	N/A	N/A	N/A			

Blasting Dust

No particulate emission factor for blasting. Moisture and retention time should minimize any blasting particulate emissions

lbs/charge
charges/day
charges/yr

Uncontrolled PM-10			Controlled PM-10		
lbs/hr	lbs/day	tons/yr	lbs/hr	lbs/day	tons/yr

Drilling Dust

Drilling is a wet process, which results in complete particulate emissions control

Material Transfers

80 % relative humidity

20 minutes mean mine retention time before vented
high % resulting mine particulate emission control

The 20 minute retention time is based upon the mine ventilation system, which is designed to turn over the air in the mine once per hour. The 20 minutes is conservative since the ventilation system will be temporarily shut down or lowered when blasting, which typically occurs in the further distances from the ventilation system vent, the portal at the mouth of the mine

One pick up and one drop per load of ore
2 number of transfers

Fugitive Source	Moisture content	AP-42 Table 11.19-2 EF	PM-10 EF (lbs/ton)	Max thruput tons/hr	Max thruput tons/day	Max thruput tons/yr	Uncontr	Uncontr	Uncontr	Control Efficiency	Contr	Contr	Contr
							Max PM10 emiss lbs/hr	Max PM10 emiss lbs/day	Max PM10 emiss tons/yr		Max PM10 emiss lbs/hr	Max PM10 emiss lbs/day	Max PM10 emiss lbs/yr
Loader grab from Mine	5%	E	0.00048	100	2500	400000	0.0481	1.2023	0.0962		0.0240	0.6011	0.0481
Loader dump into Truck	5%	E	0.00048	100	2500	400000	0.0481	1.2023	0.0962		0.0240	0.6011	0.0481
Totals							0.0962	2.4046	0.1924		0.0481	1.2023	0.0962
Mine humidity, mine retention time result in						50%	control efficiency						

Watering or chemical dust suppression will be used if necessary when visible dust to maintain dust control efficiency

Vehicle Emissions

Mine humidity, mine retention time, and large particle sizes result in 50% control efficiency

Vehicle and Weight (tons)	Miles Driven/Day	Effective Weight, empty (tons)	Effective Weight, full (tons)	Mean Weight (tons)	E (lbs/VMT)	Uncontrolled PM-10			Controlled PM-10		
						max lbs/hr	lbs/day	tons/yr	lbs/hr	lbs/day	tons/yr
^a Haul truck	1.76	21	42	31.5	2.454287	0.54	4.3	0.8	0.27	2.16	0.39
Shotcrete truck	1.76	10	20	15	1.757627	0.58	3.1	0.6	0.29	1.55	0.28
Loader	3	60	75	67.5	3.458376	1.95	10.4	1.9	0.97	5.19	0.95
Totals	6.52					3.07	17.79	3.25	1.53	8.89	1.62

Very conservative assumptions on loader

AP-42 13.2.2 equation (1a), updated 12/03, for unpaved road traffic on an industrial site with precip reduction from AP-42 13.2.2.2 equ 2

$$E = k \left(\frac{s}{12} \right)^a \left(\frac{W}{3} \right)^b \left(\frac{365 - P}{365} \right)$$

E = Emission Factor (lb/VMT)¹
 s = surface material silt content (%)
 W = mean vehicle weight (tons)
 a, b, k = empirical constants
 P = number of days in a year with at least 0.01 inches of precipitation

Road emissions were

- Roads are covered with gravel/crush limestone
- The mean silt content is 6.4% (Table 6-2, WRAP Fugitive Dust Handbook, 2006).

Constants	PM _{2.5}	PM ₁₀	PM
k	0.15	1.5	4.9
a	0.9	0.9	0.7
b	0.45	0.45	0.45

s= 6.4

P= 0 underground

Cumulative underground emissions exhausting from the mine

	Uncontrolled			Controlled		
	lbs/hr	lbs/day	tons/yr	lbs/hr	lbs/day	tons/yr
NO ₂	4.8	25.7	4.7	4.82	25.7	4.69
SO ₂	0.6	3.0	0.6	0.57	3.0	0.55
CO	19.0	101.2	18.5	18.98	101.2	18.48
PM-10	3.2	20.2	3.4	1.58	10.1	1.72

Model source name
EP1601

Modeled as a volume source at the 15' high mine portal where the mine ventilation system releases into ambient air

Appendix E

Air Quality Modeling Support Documents

Attachment 1

Modeling Protocol Approval Letter



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 NORTH HILTON, BOISE, ID 83706 • (208) 373-0502

C. L. "BUTCH" OTTER, GOVERNOR
TONI HARDESTY, DIRECTOR

April 7, 2008

Chris Johnson
CJ Environmental

RE: Modeling Protocol for the Idaho Cobalt Project, Formation Capital Corporation, U.S.,
Facility Located near Salmon, Idaho

Dear Chris:

DEQ received your dispersion modeling protocol on March 27, 2008. The modeling protocol was submitted on behalf of the Formation Capital Corporation, U.S., located in Salmon, Idaho, for the proposed Idaho Cobalt Project, located approximately 25 miles west of Salmon, Idaho. The modeling protocol proposes methods and data for use in the ambient impact analyses to support a Permit to Construct application for a proposed Greenfield facility consisting of an underground cobalt and copper mining operation and an associated milling plant.

The modeling protocol has been reviewed and DEQ has the following comments:

- Comment 1: The application should provide documentation and justification for stack parameters used in the modeling analyses, clearly showing how stack gas temperatures and flow rates were estimated. Include calculations and assumptions. In most instances, applicants should use typical parameters, not maximum temperatures and flow rates.

If information was provided by a manufacturer or engineering design firm, include a copy of the documentation they provided as the basis for the design parameters. For area and volume sources include all assumptions and calculations used to generate the model inputs.

- Comment 2: The proposed receptor grid of receptors appears reasonable. However, it is the applicant's responsibility to use a sufficiently tight receptor network such that the maximum modeled concentration is reasonably resolved. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.
- Comment 3: Provide a complete, scaled facility plot plan that includes the locations of all emissions sources and buildings with the permit application. All building dimensions must be included either in the plot plan or be cross-referenced in a table. This document should be independent of the modeling input file and will be used to verify source and structure locations.

- Comment 4: Provide a detailed description of the determination of the ambient air boundary. The facility must prevent public access inside the ambient air boundary using methods described in the *Idaho Air Modeling Guideline*. It is not clear whether the Formation Capital Corporation, U.S., can legally prohibit public access to areas within the ambient air boundary, as described in the modeling protocol. Stream crossings, infrequency of hunting and camping uses, and lack of vistas on public lands do not adequately support legal control of public access. DEQ must evaluate ambient air boundaries on the basis of legal control of public access to the property.
- Comment 5: If a revised ambient air boundary is used, re-evaluate whether the buildings that were excluded from the BPIP-PRIME input file should be included to assess the effects of building downwash.
- Comment 6: DEQ permitting staff has not reviewed the emission inventory submitted in the modeling protocol for completeness and accuracy. Review will be conducted after the official permit application is received by DEQ.
- Comment 7: The ambient impact analyses may be performed with a single year of 2004 on-site surface meteorological data, provided all other upper air and surface data for the Missoula and Great Falls, Montana stations are also 2004 data. DEQ will not approve the use of any AERMET-processed meteorological data set(s) using data from different years. If this project uses the 2004 on-site surface met data, provide a detailed description of the on-site met data and site, including UTM coordinates and elevation of the met station, and the quality assurance/quality control of the data. Also, submit all intermediary AERMET processing files.

If you are unable to obtain the data needed to generate a complete AERMOD-ready met file for 2004, which uses, in part, on-site met data, perform the modeling analyses using both 5-year data sets for Idaho Falls/Roberts, Idaho and Paul, Idaho. These are regarded as non-representative met files for the Idaho Cobalt facility's location, and the highest second high values should be used as design concentrations for all pollutants with averaging periods of 24 hours or less. If only one 5-year met data set is used for the modeling analyses, add an additional 20% to the design concentrations to account for the non-representative met data.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance. Please submit a revised modeling protocol if you would like DEQ's review and approval prior to submitting the air quality permit application.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP, raw meteorological data files, AERMAP input and output files, and AERMET input and output files) are submitted with an analysis report if a different dataset than provided to you by DEQ is used for this project. If you have any further questions or comments, please contact me at (208) 373-0536.

Sincerely,

Darrin Mehr

Darrin Mehr
Air Quality Analyst
Idaho Department of Environmental Quality

Attachment 2

Proposed Responses to IDEQ Protocol Approval Comment

ICP Planned Response To IDEQ Modeling Approval Comments

This document indicates the responses Formation Capital Corp. plans to include in the Idaho Cobalt Project (ICP) air permit application in response to Idaho DEQ Modeling Protocol Approval letter comments. **We request IDEQ written concurrence with these proposed responses, or specific recommendations if IDEQ has any concern with the proposed methodologies.**

IDEQ Protocol Approval Comments are listed in Italics, generally shortened here but intended to reflect the entire IDEQ comment in the Protocol Approval letter, and numbered as per the IDEQ letter. The proposed response follows in regular text format

1 Applicant should document and defend stack parameters

There are only two point sources included in the modeling. Stack parameters for both new pieces of equipment are straight from manufacturer's specifications. All model fugitive source model source parameter derivation will also be documented consistent with recent IDEQ precedent.

2 Applicant's responsibility to ensure a receptor network with sufficient detail and resolution

The submittal modeling will include no more than 50 meter grid spacing anywhere on the property boundary within 500 meters of a model emission source or directly downwind from one. Near model sources, the ambient air boundary receptor grid spacing will be no more than 25 meters. The receptor network will include 50 meter grid spacing out to at least 100 meters near every area where boundary grid spacing is 50 meters or less. Because almost all model sources are fugitives, the receptor network will extend out 1 kilometer from the boundary, with increased grid spacing beyond 100m. In the unlikely event the model predicted maximum impact does not occur within the 50 meter grid spacing, a fine receptor network will be added to ensure at least 25 meter grid spacing in the vicinity of the model predicted maximum impact.

3 Provide a complete, scaled plot plan including emission sources and buildings.

There will be a scaled plot plan with the permit application that makes the ambient air boundary, all buildings and emission sources clear. The modeling report will also include a figure showing the same information as gridded in the model, with UTM coordinates.

4 Describe and Defend the Ambient Air Boundary

As a result of the pre-application meeting discussion, we will use the ICP claim boundary as the public access and ambient air boundary. Access can be controlled at that boundary, within which ICP will have approval to operate, mine, and control access around all activity areas. ICP plans to train staff to recognize and discourage unauthorized access. As noted during the

discussion and in the modeling protocol, public access is further controlled by locked gates miles down the road and inaccessible terrain at this high elevation location in the mountains.

5 Reconsider building for downwash if Ambient Air Boundary is used

All buildings with 5 building dimensions (largest of length, width, or height) will be included in the modeling analysis. That is expected to include only the crusher and concentrator buildings at the mill site.

6 IDEQ has not yet reviewed the emission inventory, so protocol does not imply emission inventory concurrence

That is understood. A copy of the June 9, 2008 draft emission inventory was shared with IDEQ project permit analyst Morrie Lewis and modeling representative Darrin Mehr to provide a preview of how we estimated underground emission calculation as promised in the pre-application meeting. That draft EI identifies all model source names and emissions. We have requested IDEQ concurrence on the underground emission calculations and parameterization, and would appreciate and react to any other comments IDEQ might have, with the goal of providing a complete permit application.

7 Met data file options / requirements; One year onsite with specified NWS surface and upper air run through AERMET, options using 5 years or 10 years of questionably representative IDEQ supplied AERMOD ready met files

We purchased the recommended 2004 Missoula surface and Great Falls upper air data, and processed the onsite met data through AERMET to be model ready. The modeling submittal will be based upon this 2004 onsite met data file consistent with IDEQ recommendations in the Protocol Approval letter. Complete documentation of the met data processing will be submitted.

Attachment 3

IDEQ Concurrence with Proposed Protocol Comment Responses

RE: Modeling protocol for Idaho Cobalt

From: **Darrin.Mehr@deq.idaho.gov**
Sent: Tue 6/17/08 5:59 PM
To: **cjenv@hotmail.com**
Cc: **Kevin.Schilling@deq.idaho.gov; Morrie.Lewis@deq.idaho.gov; amcfarland@formcap.com**

Chris,

I've looked at Idaho Cobalt's email responses to the April 7, 2008 modeling protocol approval letter and have comments on a couple of the responses.

Item 1

1 Describe and Defend the Ambient Air Boundary

As a result of the pre-application meeting discussion, we will use the ICP claim boundary as the public access and ambient air boundary. Access can be controlled at that boundary, within which ICP will have approval to operate, mine, and control access around all activity areas. ICP plans to train staff to recognize and discourage unauthorized access. As noted during the discussion and in the modeling protocol, public access is further controlled by locked gates miles down the road and inaccessible terrain at this high elevation location in the mountains.

The protocol states that the Idaho Cobalt Project claim boundary will be used as the ambient air boundary. Please describe the legal basis for legally restricting public access using any legal provisions and/or determinations provided by government regulations and government entities that regulate unpatented mining claims. Based on the initial pre-application meeting with you and Conrad Parrish, Bill Rogers, Morrie Lewis, and myself, it was understood that all of Idaho Cobalt's mining claims will be unpatented mining claims, and that unpatented mining claims are not necessarily viewed as private property, as is the case with patented mining claims.

Consider the following points as a non-exclusive list of relevant topics for your consideration in the ambient air boundary determination:

If the government entity/entities that regulate Idaho Cobalt's land use, ownership/lease rights on these parcels allow for the use of additional gating at any other roadway access point in addition to the Noranda/Blackbird Mine gate, please state if that is Idaho Cobalt's intent to do so to restrict public access.

Would all areas of the unpatented mining claims be under active control by Idaho Cobalt? Considerations include whether active use will occur on all claims considered to be within the ambient air boundary, and whether Idaho Cobalt staff have the capability of direct visual observation of all of these areas. Would Idaho Cobalt post any no trespassing signage at any locations around the ambient air boundary if they have the legal right to exclude public access from the claim areas?

Item 2

The map provided in your June 9th email provides a plot plan depicting the emission sources associated with the proposed project. Please submit a plot plan that shows the entire ambient air boundary with the

permit application. Also, it would be helpful to see an overlay of Idaho Cobalt's mining claims on a topographic plot plan of the site.

Please let me know if you have any questions. Morrie and I are looking forward to working with you and Idaho Cobalt in developing their Permit to Construct.

Best Regards,

Darrin

Darrin Mehr

Air Quality Analyst

Monitoring, Modeling & Emissions Inventory

Idaho Department of Environmental Quality

Phone: 208-373-0536

Fax: 208-373-0143

e-mail: Darrin.Mehr@deq.idaho.gov

Attachment 4

BPIP-Prime Run Summary

File ICP.SUM

BEE-Line Software Version: 9.95

Input File - ICP.PRW
Input File - ICP.PIP
Output File - ICP.TAB
Output File - ICP.SUM
Output File - ICP.SO

BPIP (Dated: 04274)

DATE : 03/18/2008

TIME : 05:30:14 PM

C:\Formation\ICP.BST BEESTWin BPIP-Prime Files 3/18/2008 5:30:13 PM

=====

BPIP PROCESSING INFORMATION:

=====

The P flag has been set for preparing downwash related data
for a model run utilizing the PRIME algorithm.

Inputs entered in METERS will be converted to meters using
a conversion factor of 1.0000. Output will be in meters.

The UTM variable is set to UTM. The input is assumed to be in
UTM coordinates. BPIP will move the UTM origin to the first pair of
UTM coordinates read. The UTM coordinates of the new origin will
be subtracted from all the other UTM coordinates entered to form
this new local coordinate system.

Plant north is set to 0.00 degrees with respect to True North.

C:\Formation\ICP.BST BEESTWin BPIP-Prime Files 3/18/2008 5:30:13 PM

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE (Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
DSTCOLSK	10.97	-5.25	36.49	65.00
BKUPGEN	0.91	-0.59	44.02	65.00

- * Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.
- ** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 03/18/2008
TIME : 05:30:14 PM

C:\Formation\ICP.BST BEESTWin BPIP-Prime Files 3/18/2008 5:30:13 PM

BPIP output is in meters

SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDHGT	DSTCOLSK	12.50	12.50	12.50	12.50	12.50	12.50
SO BUILDWID	DSTCOLSK	32.93	26.59	28.98	34.97	39.91	43.63
SO BUILDWID	DSTCOLSK	46.02	47.02	46.58	44.74	41.53	42.88
SO BUILDWID	DSTCOLSK	45.60	46.94	46.85	45.34	42.45	38.27
SO BUILDWID	DSTCOLSK	32.93	26.59	28.98	34.97	39.91	43.63
SO BUILDWID	DSTCOLSK	46.02	47.02	46.58	44.74	41.53	42.88
SO BUILDWID	DSTCOLSK	45.60	46.94	46.85	45.34	42.45	38.27
SO BUILDLEN	DSTCOLSK	44.74	41.53	42.88	45.60	46.94	46.85
SO BUILDLEN	DSTCOLSK	45.34	42.45	38.27	32.93	26.59	28.98
SO BUILDLEN	DSTCOLSK	34.97	39.91	43.63	46.02	47.02	46.58
SO BUILDLEN	DSTCOLSK	44.74	41.53	42.88	45.60	46.94	46.85
SO BUILDLEN	DSTCOLSK	45.34	42.45	38.27	32.93	26.59	28.98
SO BUILDLEN	DSTCOLSK	34.97	39.91	43.63	46.02	47.02	46.58
SO XBADJ	DSTCOLSK	-31.69	-33.58	-37.34	-41.32	-44.04	-45.43
SO XBADJ	DSTCOLSK	-45.43	-44.06	-41.34	-37.38	-32.27	-30.95
SO XBADJ	DSTCOLSK	-30.93	-29.98	-28.11	-25.39	-21.90	-17.74
SO XBADJ	DSTCOLSK	-13.04	-7.95	-5.54	-4.29	-2.90	-1.43
SO XBADJ	DSTCOLSK	0.09	1.60	3.07	4.44	5.68	1.97
SO XBADJ	DSTCOLSK	-4.04	-9.93	-15.51	-20.63	-25.12	-28.84
SO YBADJ	DSTCOLSK	20.91	18.98	16.46	13.45	10.03	6.30
SO YBADJ	DSTCOLSK	2.38	-1.61	-5.55	-9.33	-12.82	-15.90
SO YBADJ	DSTCOLSK	-18.51	-20.57	-22.00	-22.76	-22.83	-22.21
SO YBADJ	DSTCOLSK	-20.91	-18.98	-16.46	-13.45	-10.03	-6.30
SO YBADJ	DSTCOLSK	-2.38	1.61	5.55	9.33	12.82	15.90

SO YBADJ	DSTCOLSK	18.51	20.57	22.00	22.76	22.83	22.21
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDHGT	BKUPGEN	17.37	17.37	17.37	17.37	17.37	17.37
SO BUILDWID	BKUPGEN	37.78	30.03	33.10	40.43	46.53	51.22
SO BUILDWID	BKUPGEN	54.35	55.83	55.62	53.72	50.18	51.71
SO BUILDWID	BKUPGEN	54.64	55.90	55.47	53.35	49.62	44.37
SO BUILDWID	BKUPGEN	37.78	30.03	33.10	40.43	46.53	51.22
SO BUILDWID	BKUPGEN	54.35	55.83	55.62	53.72	50.18	51.71
SO BUILDWID	BKUPGEN	54.64	55.90	55.47	53.35	49.62	44.37
SO BUILDLEN	BKUPGEN	53.72	50.18	51.71	54.64	55.90	55.47
SO BUILDLEN	BKUPGEN	53.35	49.62	44.37	37.78	30.03	33.10
SO BUILDLEN	BKUPGEN	40.43	46.53	51.22	54.35	55.83	55.62
SO BUILDLEN	BKUPGEN	53.72	50.18	51.71	54.64	55.90	55.47
SO BUILDLEN	BKUPGEN	53.35	49.62	44.37	37.78	30.03	33.10
SO BUILDLEN	BKUPGEN	40.43	46.53	51.22	54.35	55.83	55.62
SO XBADJ	BKUPGEN	-57.48	-54.36	-52.88	-51.28	-48.12	-43.50
SO XBADJ	BKUPGEN	-37.56	-30.47	-22.46	-13.77	-4.66	-1.26
SO XBADJ	BKUPGEN	-0.47	0.34	1.14	1.91	2.61	3.24
SO XBADJ	BKUPGEN	3.77	4.18	1.18	-3.35	-7.78	-11.97
SO XBADJ	BKUPGEN	-15.80	-19.14	-21.91	-24.01	-25.38	-31.83
SO XBADJ	BKUPGEN	-39.96	-46.87	-52.36	-56.26	-58.45	-58.86
SO YBADJ	BKUPGEN	-5.12	-10.36	-15.29	-19.75	-23.61	-26.75
SO YBADJ	BKUPGEN	-29.08	-30.53	-31.05	-30.63	-29.27	-27.03
SO YBADJ	BKUPGEN	-23.96	-20.17	-15.77	-10.88	-5.66	-0.28
SO YBADJ	BKUPGEN	5.12	10.36	15.29	19.75	23.61	26.75
SO YBADJ	BKUPGEN	29.08	30.53	31.05	30.63	29.27	27.03
SO YBADJ	BKUPGEN	23.96	20.17	15.77	10.88	5.66	0.28

Appendix F

IDEQ Pre-Permit Construction PTC Application Completeness Checklist

COMPLETENESS DETERMINATION CHECKLIST

Company Name Formation Capital Corp.

Location Salmon Idaho

Project Idaho Cobalt Project 15-Day Pre-Construction Approval PTC Application

Reviewer Chris Johnson Date 6-20-2008

IDEQ 15-Day Pre-Permit Construction Approval Application Completeness Checklist, and Documentation of the ICP application's compliance assuring a complete application

By meeting those completeness requirements, the application also meets all requirements on the IDEQ Minor Source Permit To Construct Application Completeness Checklist, which are duplicative.

I. Actions Needed Before Submitting Application (YES / NO)

y Refer to the Rule. Read the Pre-Permit Construction requirements contained in IDAPA 58.01.01.213.

PTC Requirements in IDAPA 58.01.01.200-228 have been reviewed, and followed in this PTC application.

y Refer to DEQ's Pre-Permit Construction Approval Guidance Document. DEQ has developed a guidance document to aid applicants in submitting a complete pre-permit construction approval application.

The IDEQ Pre-Permit Construction Approval Guidance Document was used as a reference for developing the permit application. The application structure exactly matches the recommendation in that document. This document verifies that everything necessary for a complete application is included and locatable.

y Consult with DEQ Representatives. Schedule a meeting with DEQ to discuss application requirements before submitting the pre-permit construction approval application. The meeting can be in person or on the phone. Contact DEQ's Air Quality Permit Coordinator at (208) 373-0502 to schedule the meeting.

We held a pre-application meeting at IDEQ on April 7, 2008. We followed up that discussion by working with IDEQ Permit Engineer Morrie Lewis and Modeling Representative Darrin Mehr to verify their recommendations on details for multiple application components to ensure application completeness and ease of review.

y Schedule Informational Meeting. Schedule an informational meeting before submitting the pre-permit construction approval application for the purposes of satisfying IDAPA 58.01.01.213.02.a. The purpose for the informational meeting is to provide information about the proposed project to the general public. Refer to IDAPA 58.01.01.213.01.c.

We drew up plans to announce and hold the Informational meeting well in advance of the permit application. The copy of the Affidavit of Publication and the announcement in the July 10th and July 17th Recorder Herald in Salmon, Idaho in Appendix C documents the scheduled July 21 informational meeting. All meeting plans and documentation are designed to meet IDAPA 58.01.01.213 requirements.

- y Submit Ambient Air Quality Modeling Protocol. It is recommended that an ambient air quality modeling protocol be submitted to DEQ at least two (2) weeks before the pre-permit construction approval application is submitted.
- y Written DEQ Approved Protocol. Written DEQ approval of the modeling protocol must be received before the pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.213.01.c.

We submitted a Modeling Protocol in March of 2008, and received IDEQ written approval for our modeling protocol before the April 7, 2008 pre-application meeting. Copies of the Protocol and IDEQ's written approval are included in Appendix B of the air quality modeling report in Section 6 of the application. We also documented our plans to respond to IDEQ comments in the protocol approval, and received IDEQ concurrence for those recommendations

II. Application Content

Application content should be prepared using the checklist below. The checklist is based on the requirements contained in IDAPA 58.01.01.213 and DEQ's Pre-Permit Construction Approval Guidance Document.

- y Pre-Permit Construction Eligibility and Proof of Eligibility. Pre-permit construction approval is available for minor sources and for minor modifications only. Emissions netting and emissions offsets are not allowed to be used. A certified proof of pre-permit construction eligibility must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.

The facility Emission Inventory, in Tables 5-1 and 5-2 and in more detail in Appendix D, shows that facility-wide emissions are well below the 250 ton per year criteria pollutant major source category for this non-designated facility, and below the 100 ton per year threshold for Title V major sources. Facility HAP emissions are minimal, and do not approach the HAP major source threshold of 25 tons/yr. Therefore, this proposed action is a minor modification to a minor source. As such, the facility is eligible for the Pre-Permit Construction process being requested here.

- y Request to Construct Before Obtaining a Permit to Construct. A letter requesting the ability to construct before obtaining the required permit to construct must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.01.c.

The facility's request for Pre-Permit Construction approval is clearly stated in the subject line and first paragraph of the cover letter accompanying this application, and in the introduction to the application before Section 1.

- y Apply for a Permit to Construct. Submit a Permit to Construct application using forms available on DEQ's website

The main text of this application meets those requirements.

- y Permit to Construct Application Fee. The permit to construct application fee must be submitted at the time the original pre-permit construction approval application is submitted. Refer to IDAPA 58.01.01.224.

The \$1000 application fee is enclosed with this application. Appendix C includes a copy of the check.

- y Notice of Informational Meeting. Within ten (10) days after the submittal of the pre-permit construction approval application, an information meeting must be held in at least one location in the region where the stationary source will be located. The information meeting must be made known by notice published at least ten (10) days before the information meeting in a newspaper of general circulation in the county in which the stationary source will be located.

A copy of this notice, as published, must be submitted with the pre-permit construction approval application. Refer to IDAPA 58.01.01.213.02.a.

As mentioned above, a copy of the announcement in the July 10th and July 17th 2008 Recorder Herald in Appendix C documents the scheduled July 21 Informational meeting.

- y Process Description(s). The process or processes for which pre-permit construction approval is requested must be described in sufficient detail and clarity such that a member of the general public not familiar with air quality can clearly understand the proposed project. A process flow diagram is required for each process for which pre-permit construction approval is requested. Refer to IDAPA 58.01.01.213.01.c.

See Section 1 of the application for the process description.

A brief summary of the process(es) proposed: The proposed action consists of an underground mine with occasional blasting, loaders and trucks to transport ore, a tram hopper bin and tram to transport ore to the crusher building, ore and waste rock stockpiles at the crusher building, loaders feeding the crusher building feed hopper, crushing and screening operations in an enclosed building vented through a baghouse, an enclosed conveyor transporting fine ore to a bin whose only vent is filtered, enclosed ore transport into a concentrator building where the ore is wetted, transport of refined ore offsite, a small pile of wet tailings outside the concentrator building that is cleared daily, a cement silo with a baghouse as the only vent and fully enclosed transfer to the concentrator building, loaders filling trucks with waste rock and tailings, transport of those materials to the Tailings and Waste Storage Facility where they're dumped, compacted, and revegetated, and a topsoil stockpile intermittently active and otherwise revegetated.

- y Equipment List. All equipment that will be used for which pre-permit construction approval is requested must be described in detail. Such description includes, but is not limited to, manufacturer, model number or other descriptor, serial number, maximum process rate, proposed process rate, maximum heat input capacity, stack height, stack diameter, stack gas flowrate, stack gas temperature, etc. All equipment that will be used for which pre-permit construction approval is requested must be clearly labeled on the process flow diagram. Refer to IDAPA 58.01.01.213.01.c.

The vast majority of the proposed equipment to be constructed would involve only well controlled fugitive particulate emissions. The only non-fugitive sources proposed are an emergency generator and a Crusher building baghouse. Two bins with filtered vents, one for fine ore going into the concentrator and one for cement, are identified as area sources. The equipment proposed is discussed in the detailed process descriptions in Section 1, and documented in the IDEQ EU forms in Appendix A and in the facility emission inventory in Appendix D. Appendix B provides a detailed equipment list.

- y Scaled Plot Plan. It is recommended that a scaled plot plan be included in the pre-permit construction approval application and must clearly label the location of each proposed process and the equipment that will be used in the process.

Section 6 includes a scaled plot plan. Figures in the Modeling Report in Section 7 show the facility location on a USGS topographic map, and the model sources and claim boundary on UTM coordinates. The initial figure in the Process flow Diagram in Section 2 also includes the location of all facility activity locations on a topographic map.

- y Proposed Emissions Limits and Modeled Ambient Concentration for All Regulated Air Pollutants. All proposed emission limits and modeled ambient concentrations for all regulated air pollutants must demonstrate compliance with all applicable air quality rules and regulations. Regulated air pollutants include criteria air pollutants (PM₁₀, SO_x, NO₂, O₃, CO, lead), toxic air pollutants listed pursuant to IDAPA 58.01.01.585 and 586, and hazardous air pollutants listed pursuant to Section 112 of the 1990 Clean Air Act Amendments (go to <http://www.epa.gov/ttn/atw/188polls.html>). Describe in detail how the proposed emissions limits and modeled ambient concentrations demonstrate compliance with each applicable air quality rule and regulation. It is requested that emissions calculations, assumptions, and documentation be submitted with

sufficient detail so DEQ can verify the validity of the emissions estimates. Refer to IDAPA 58.01.01.213.01.c.

Section 7 of this application provides the air quality modeling report, which was prepared consistent with the IDEQ-approved Modeling Protocol. The facility emission inventory is based upon equipment capacity. No permit limits are proposed.

y Restrictions on Source's Potential To Emit

No such restrictions are proposed, except for the emergency generator meeting IDAPA requirements for emergency use of less than 500 hours per year.

y List all Applicable Requirements. All applicable requirements must be cited by the rule or regulation section/subpart that applies for each emissions unit. Refer to IDAPA 58.01.01.213.01.c.

Section 3 documents all applicable regulatory requirements, and compliance of the proposed action.

y Certification of Pre-Permit Construction Approval Application. The pre-permit construction approval application must be signed by the Responsible Official and must contain a certification signed by the Responsible Official. The certification must state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Refer to IDAPA 58.01.01.213.01.d and IDAPA 58.01.01.123.

The required certifications are included on Form GI in Appendix A of this application.

y Submit the Pre-Construction Approval Application. Submit the pre-permit construction approval application to the following address:

Air Quality Program Office – Application Processing
Department of Environmental Quality
1410 North Hilton
Boise, ID 83706-1255